

Perchlorate in the San Gabriel Basin

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Perchlorate Background

- Industrial Applications
 - Solid rocket propellant
 - Fireworks
 - Explosives
- Enters drinking water sources through industrial discharges
- Proven to interfere with thyroid gland operation
- Special risk to infants and young children

Known Health Affects (Simplified)

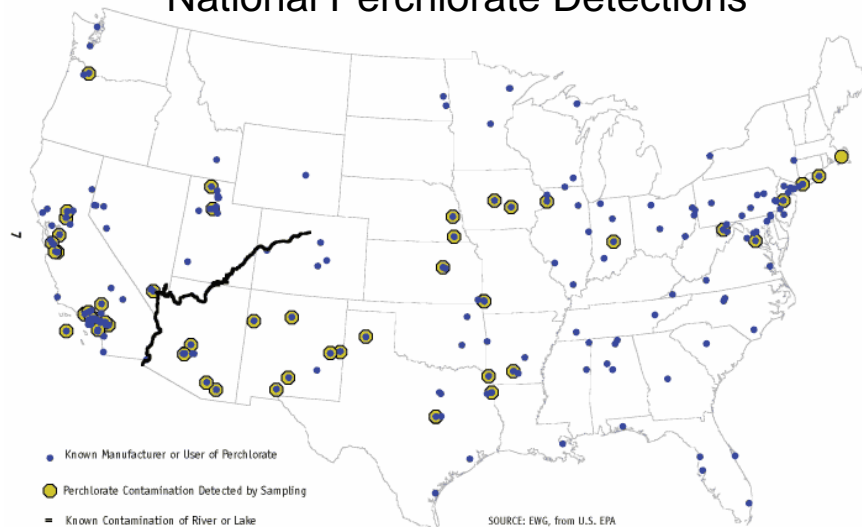
- Thyroid may use perchlorate instead of iodine
- Thyroid won't produce hormones without iodine
- Lack of hormones disrupts delicate balance
- Hurts metabolism, growth and development in infants and young children

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National Perchlorate Detections



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Statewide Perchlorate Detections

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Active and Standby Sources with Perchlorate Detections (September 2001-September 1, 2006) ^{a,b}					
County	Detection at or above 4-µg/L DLR		Detection above 6-µg/L NL		Peak Conc. (µg/L)
	No. of Sources	No. of Systems	No. of Sources	No. of Systems	
Los Angeles	106	31	72	21	100
Riverside	64	9	50	7	73
San Bernardino	62	16	38	12	95
Orange	19	9	4	3	10.6
Santa Clara	8	4	3	3	8
San Diego	5	3	1	1	7
Sacramento	4	2	1	1	95.9
Imperial	4	1	0	0	6
Tulare	1	1	1	1	24
Ventura	1	1	1	1	16
TOTAL	274	77	171	50	--
^a Detections are for sources with two or more detections at any concentration over the past five years. Sources included have peak findings at or greater than the 4-µg/L DLR, or greater than the 6-µg/L notification level (<i>i.e.</i> , equal to or greater than 6.5 µg/L). ^b Data are draft (they will change with subsequent updates). The following are not included in this table: pending, inactive, and destroyed or abandoned sources; monitoring wells; agricultural wells; and sources with peak detections below the DLR. All of those sources, however, are included here . Summary information on all sources since 1997, including detections reported below the DLR, are included in early findings and subsequent monitoring .					

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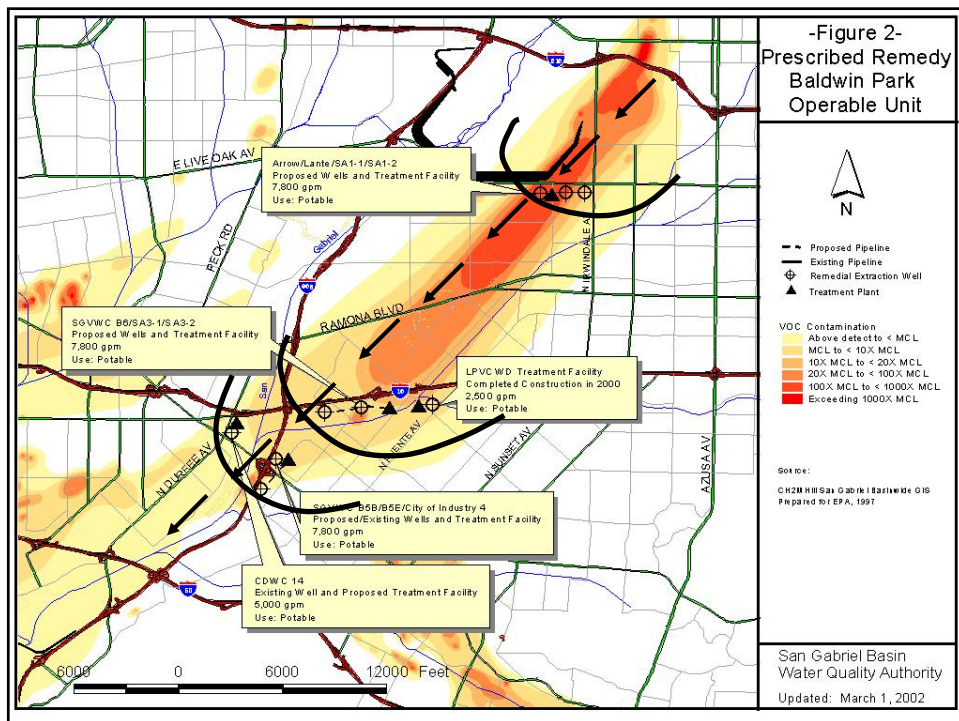
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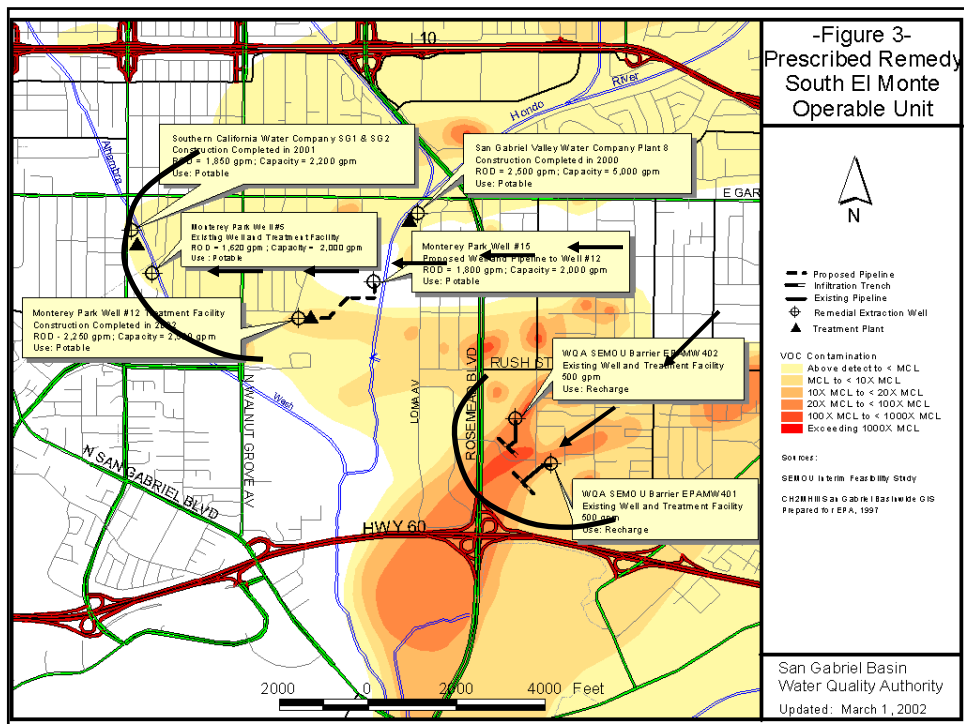
- **Perchlorate discovered in 1997**
 - First detected in the BPOU
 - Also discovered in SEMOU, EMOU, PVOU, Area 3
 - Wells immediately taken out of service
- **Derailed original BPOU Cleanup Plan**
 - Additional monitoring wells required
 - Project redesigned
 - Years of delay
- **Derailed SEMOU Cleanup Plan**
 - Closed wells being used for VOC cleanup

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Perchlorate Treatment

- **Rotating-Bed Ion Exchange (ISEP)**
 - Used in three projects
 - Regenerable Resin
- **Fixed-Bed Ion Exchange**
 - Used in three projects
 - Disposable Resin
- **Biological**
 - Not used in the San Gabriel Basin
 - Aerojet has done extensive testing
 - Questions about DHS permitting
 - Questions about consumer perception

Cost of Perchlorate Treatment

- Ion Exchange Technology
 - Regenerable Resin Systems → \$400/AF*
 - Disposable Resin Systems → \$200/AF*

*An AF equals approximately 323,800 gallons.

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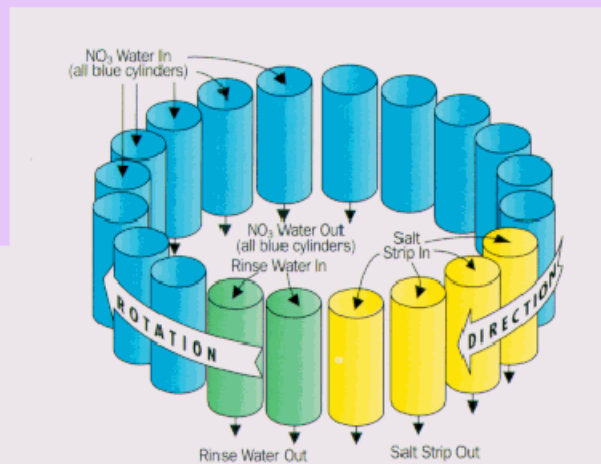


ISEP Units at San Gabriel Valley Water Company B6 Project



Dual ISEP Carousels at B6

Ion Separator (ISEP) Principles





Federal Regulation of Perchlorate

- 1992: EPA issued provisional MCL of 4 ppb
- 1995: EPA raised provisional MCL to 18 ppb
 - Based on lowered uncertainty factors
- 1998: Placed on Contaminant Candidate List
 - National Primary Drinking Water Regulation
 - Classified as secondary priority
 - Additional data required before standard could be set
- 1998: EPA raised provisional MCL to 32 ppb
 - Based on additional studies
- 2002: EPA Draft Risk Assessment MCL of 1 ppb

Federal Regulation of Perchlorate (Continued)

- 2005: Nation Academy of Sciences
 - Concluded that 0.007 mg/kg per day does not statistically inhibit thyroid uptake of iodide.
- 2006: EPA set preliminary cleanup goal of 24.5 ppb
- 2006: EPA has yet to propose or adopt an MCL

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State Regulation of Perchlorate

- 1997: DHS adopted Action Level* of 18 ppb
 - Based on EPA's provisional MCL at the time
- 2002: DHS lowered Action Level* to 4 ppb
- 2002: OEHHA proposed PHG of 6 ppb
- 2004: OEHHA finalized PHG of 6 ppb
- 2006: DHS moving forward to adopt an MCL of 6 ppb
 - Comments due to DHS by November 3, 2006

*DHS has changed the term Action Level. It is now referred to as a Notification Level.

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Questions?

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